Remarks/Arguments

Reconsideration of the above-identified application in view of the following remarks is respectfully requested.

The Specification was objected to in the Office Action of August 31, 2006. In response, the Specification has been amended to overcome this objection.

In the Office Action, claim 14 was rejected as being indefinite. The Examiner maintains that it is unclear "whether the applicant intends to claim mass 714 or 750." The Specification, paragraph 44, clearly states that the arrangement 700 of elected Fig. 7 includes a mass 714 coupled to a hub 705 via a first path, the spring 712, and a second path, the spring 752 and the electromagnetic bond of the sheath 770. Also included in the second path may be the outer ring 750 rigidly affixed to hub 705 (Specification, para. 44). Further, the transitional term "includes" is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. MPEP §2111.03.

Thus, it is clear that claim 14 recites two paths of coupling the hub 705 to the mass 714. The second path includes, <u>but is not limited to,</u> the spring 752 and the electromagnetic bond of the sheath 770. The second path of the example embodiment of Fig. 7 happens to include the outer ring 750 being rigidly affixed to hub 705. However, the claimed method of claim 14 is not limited to, and is not required to have, this feature. See MPEP §2111.03. The Examiner is respectfully requested to withdraw the indefiniteness rejection of claim 14.

Claim 17 has been rejected as indefinite. Claim 17 has been amended to overcome this rejection.

Claims 1, 11, 12, 14, and 17-20 have been rejected as anticipated by Tossman et al., US 3,637,169. Claims 13 and 21 have been rejected as unpatentable over Tossman et al. in view of Wang et al., US 6,598,717. Claims 15 and 16 have been indicated as containing allowable subject matter. Claims 2-10 and 22-27 have been withdrawn from consideration.

Applicant's representative respectfully requests that the following restatement of the previous arguments be thoughtfully reconsidered.

During patent examination, pending claims must be given their broadest reasonable interpretation. MPEP §2111. However, the broadest reasonable interpretation must also be consistent with the interpretation that those skilled in the art would reach. MPEP §2111. Further, during examination, claims must be interpreted as broadly as their terms reasonably allow. MPEP §2111.

Claim 1 recites an active damping element. The Office Action states that the magnetic structures 14, 15 of Tossman et al. are an active damping element. The Office Action states that the term "active damping element" is interpreted broadly and that the magnetic structures 14, 15 may be interpreted as an active damping element.

Active damping of vibrations is a concept that would have been well understood by one ordinary skilled in the art of control theory. Damping of oscillations may be conceptually divided into two categories: active and passive. Passive damping refers to any damping of oscillations which may be modeled upon a second order linear differential equation of the form:

$$Ax'' + Bx' + Cx = 0$$

By contrast, active damping systems may not be modeled by such equations, since the behavior of the system is governed by feedback inputs i.e. the systems are also functions of $x-\Delta x$, where Δx is the delay due to feedback; those feedback inputs are introduced to mitigate the vibrations and establish control. Thus, these systems are designated as active, since they are actively responsive to the vibrations. It is feedback and control which distinguishes the active dampening from passive dampening.

As stated in the Specification describing the example embodiments of Figs. 8 & 9, active damping involves measurement, feedback and, ultimately, when feedback is applied to the measured variable, control of a vibrational system. The magnetic structures 14, 15 of Tossman et al. do not comprise an active element because there is no provision to adjust a spring constant associated with the magnetic structures 14, 15 in response to a real time rotational measurement taken. Tossman et al. discloses no adjustment or feedback at all. For this reason, Tossman et al. does not disclose an active damping element as recited in claim 1.

In view of the foregoing, it is respectfully submitted that claim 1, as well as claims 2, 3, 22, 24, 26, and 27 which depend from claim 1, are in condition for allowance.

Claim 11 recites accelerometers coupled to the mass and the shaft for detecting the relative motion of the mass and the shaft. While Tossman et al. may disclose using angular momentum of a mass, Tossman et al. does not disclose accelerometers, which one of ordinary skill in the art would interpret as instruments that measure acceleration. Further, Tossman et al. discloses no accelerometers

since no accelerometers are required for the passive dampening disclose by Tossman et al.

Passive dampening is achieved by the feedback-less interaction of a system in motion coupled to passive damping elements. As a result of this coupling, natural relationships form according to the aforementioned passive formula. However, this type of formula by no means implies that the variables themselves are measured by a sensor. No sensor is required. Thus, unsurprisingly, Tossman et al. does not disclose accelerometers.

More specifically, accelerometers are sensors that sense acceleration. One of ordinary skill in the art would understand, in light of the Specification, how to configure calculations to derive angular velocity from acceleration. An accelerometer is a transducer whose input is acceleration. An accelerometer has, as an output, a useful physical attribute in a magnitude that bears a known relationship to the magnitude of the input. Typically, the outputs are current or voltage. Again, Tossman et al. does not disclose accelerometers.

Tossman et al. further does not disclose accelerometers coupled to a computer. Tossman et al. does not disclose a coupling by which acceleration information is communicated to a computer.

Additionally, claim 11 recites a computer coupled to the accelerometers and the current generator for detecting at least one undesired torsional vibration, determining a corresponding dampening spring stiffness improvement, and signaling current generator to adjust current in order to implement the improvement. As stated above, Tossman et al. does not disclose any feedback for detecting undesired

torsional vibration. In Tossman et al., detection and adjustment is left for trial-and-error by an operator.

The Office Action appears to interpret these limitations as mere computerization. However, these features are integral to the feedback system of the invention. As stated above, Tossman et al. does not disclose feedback. For all these reasons, it is respectfully submitted that claim 11 distinguishes over Tossman et al.

Accordingly, claim 11, as well as claims 12 and 13 which depend from claim 11, are in condition for allowance.

Claim 14 recites calculating applied current changes that, when applied by a current generator to the electromagnetic bond, change the total effective spring constant and improve dampening of the detected undesired harmonic motion. Tossman et al. does not disclose calculating current changes since there is no means to apply current changes. The calculation of Tossman et al. yields a binary decision to energize, or not, coils 18, or a binary decision to energize, or not, coil 36. These are on/off decisions, not the current changes recited by claim 14 as would be understood by one of ordinary skill in the art.

Additionally, the method of claim 14 recites calculations in a feedback system responsive to system variables, not predictive of those variables. As stated above, Tossman et al. discloses a predictive system.

Further, Tossman et al. does not disclose a mass physically coupled to the hub via a first spring and coupled to the hub via a second spring and an

electromagnetic bond. Since we have established that this limitation is definite under 35 USC §112, this limitation allows claim 14 to further define over the prior art.

In light of these points, it is respectfully submitted that claim 14, as well as claims 15-21 which depend from claim 14, are in condition for allowance.

In view of the foregoing, allowance of this application is respectfully requested. If any points remain at issue and the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 20-0090. Please also credit any overpayments to this Deposit Account.

Respectfully Submitted,

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